CLIENT(S)

100

SD I/F 112		I/F 106-0		I/F 106-1		I/F 106-n
SERV. DIR. 110		APP. 104-0		APP. 104-1	. . . .	APP. 104-n
108		102-0		102-1		102-n

FIG. 1

FIG. 2

SYSTEM SERVERS   SERVER DIRECTORY   INTERNAL CLIENT

1) REGISTER

2) QUERY

3) SERVER(S) LOCATION

4) SERVICE REQ.

NEW SERVER

5) SERVICE RESPONSE

6) REGISTER

BACK-UP SERVER

7) NEGOTIATE STATUS

7) NEGOTIATE STATUS

8) NEGOTIATE STATUS

9) CHANGE STATUS TO PRIMARY
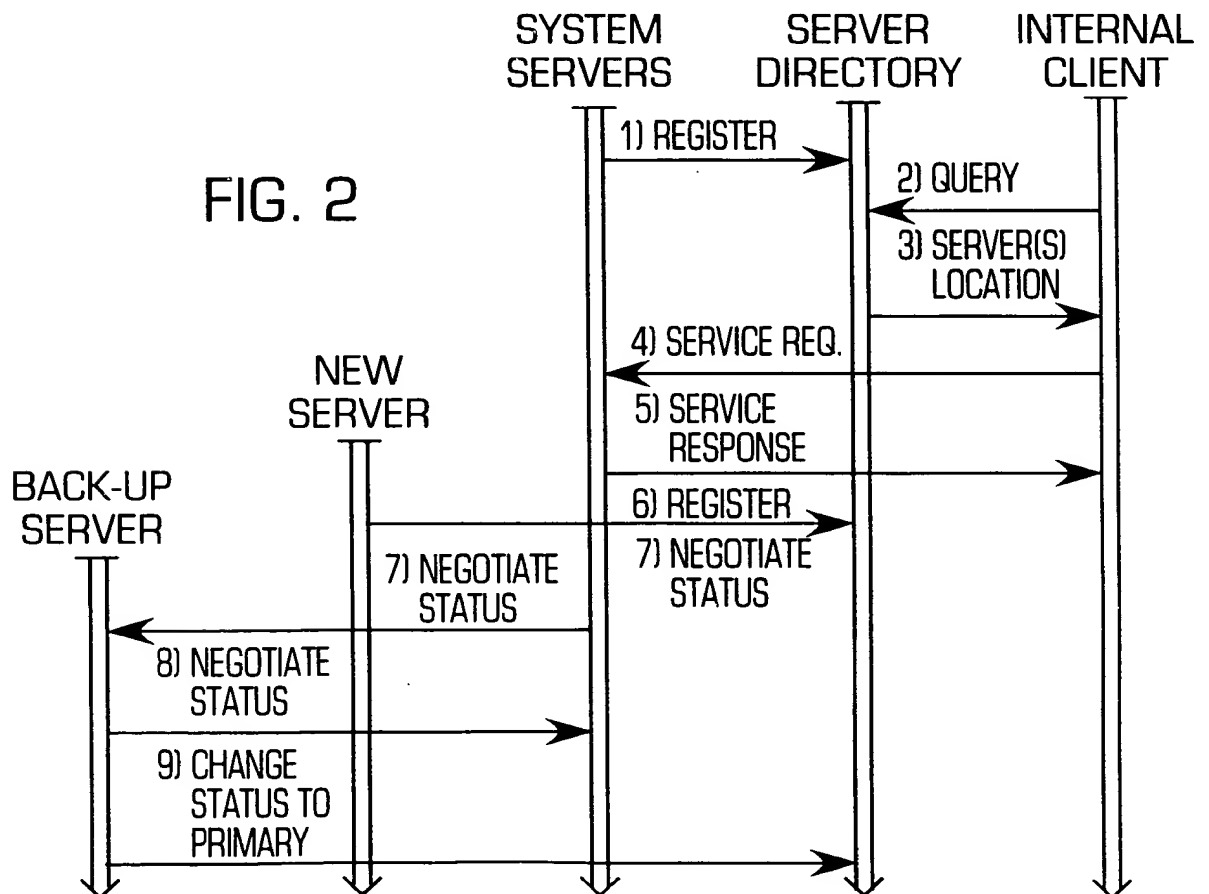
Server Functions
    Function *Start_Server*
      Out (**server features, server location**)
    Function *Push_Server_Status*
      If server status change
      Out (**change in status**)

FIG. 3A

Server Directory Interface
    Function *Register_Server*
      In (**server features, server location**)
      Modify directory to include new features
    Function *Update_Register*
      In (**change in status**)
      Modify directory to include status change
    Function *Service_Request*
      In (**Service Request**)
      Execute request as independent operation without any coupling
    Function *Load_Balance*
      In (**Server Directory**)
      If load imbalance condition 1
        update server directory to redistribute load
      If load imbalance condition 2
        change back-up server status to primary server status
      If load imbalance condition 3
        change primary server status to back-up server status
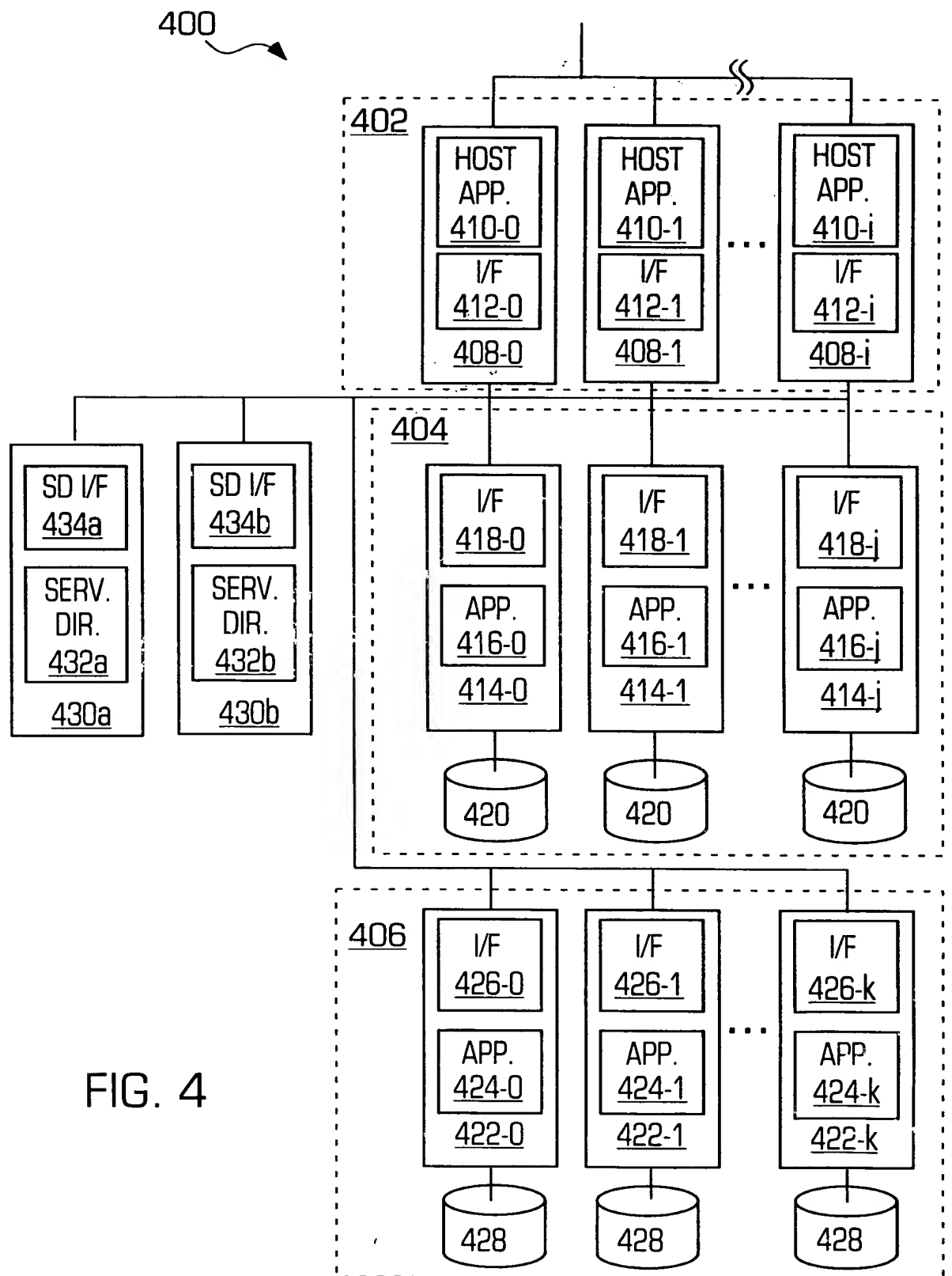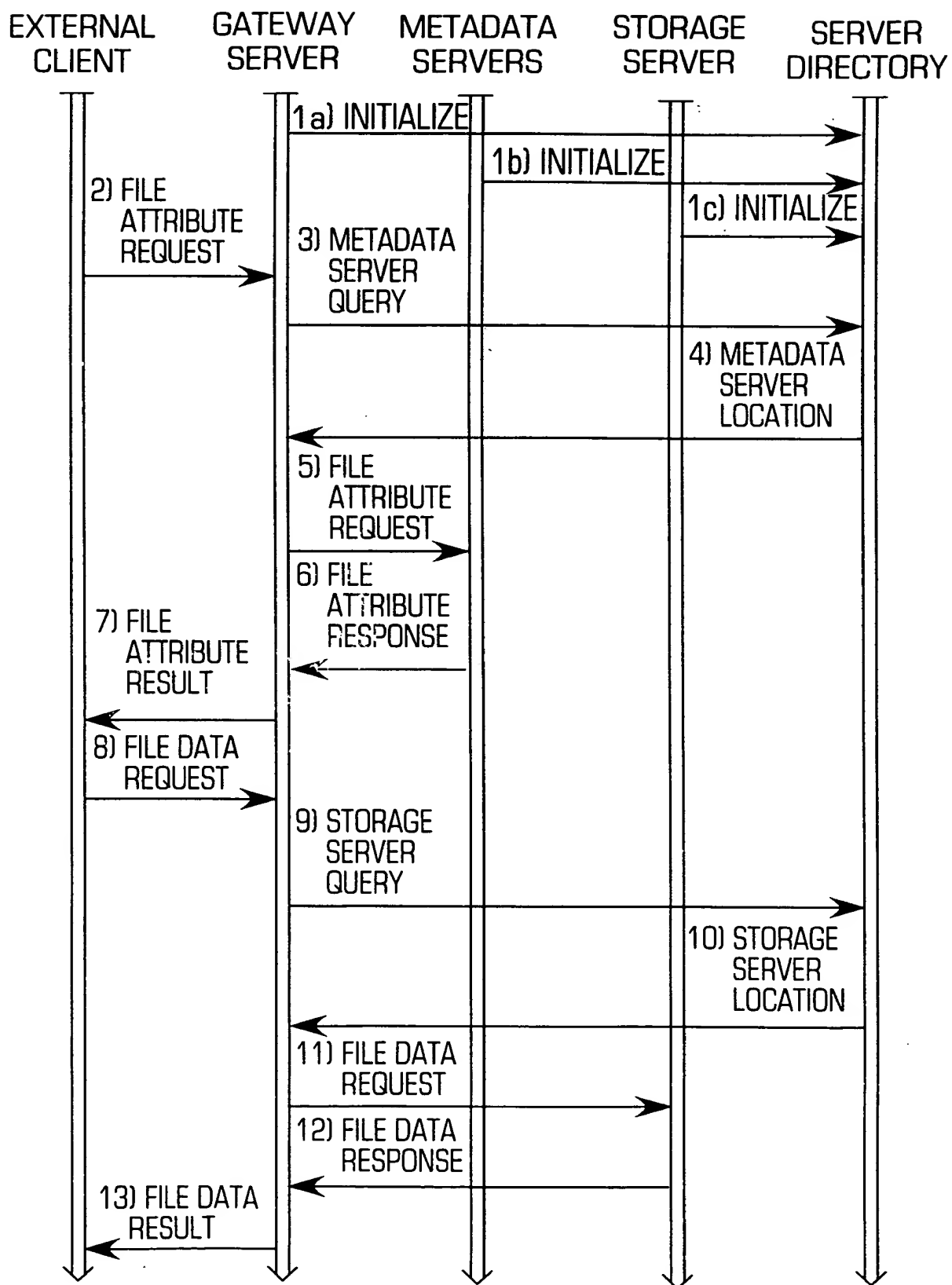
FIG. 3B

400

402

HOST APP. 410-0	HOST APP. 410-1	...	HOST APP. 410-i
I/F 412-0	I/F 412-1		I/F 412-i
408-0	408-1		408-i

404

SD I/F 434a	SD I/F 434b
SERV. DIR. 432a	SERV. DIR. 432b
430a	430b

I/F 418-0	I/F 418-1	...	I/F 418-j
APP. 416-0	APP. 416-1		APP. 416-j
414-0	414-1		414-j

| 420 | 420 | 420 |

406

I/F 426-0	I/F 426-1	...	I/F 426-k
APP. 424-0	APP. 424-1		APP. 424-k
422-0	422-1		422-k

| 428 | 428 | 428 |

FIG. 4

FIG. 5

EXTERNAL CLIENT	GATEWAY SERVER	METADATA SERVERS	STORAGE SERVER	SERVER DIRECTORY

1a) INITIALIZE

1b) INITIALIZE

1c) INITIALIZE

2) FILE ATTRIBUTE REQUEST

3) METADATA SERVER QUERY

4) METADATA SERVER LOCATION

5) FILE ATTRIBUTE REQUEST

6) FILE ATTRIBUTE RESPONSE

7) FILE ATTRIBUTE RESULT

8) FILE DATA REQUEST

9) STORAGE SERVER QUERY

10) STORAGE SERVER LOCATION

11) FILE DATA REQUEST

12) FILE DATA RESPONSE

13) FILE DATA RESULT

Gateway_Server Functions
    Function *Register_Gateway_Server*
        Out **(hosted application service requirements,
            gateway server location)**
    Function *Gateway_Server_Status*
        If gateway server resources out of range
        Out **(features that are out of range)**

FIG. 6A

Metadata_Server Functions
    Function *Register_Metadata_Server*
        Server Features = location, metadata range accessed,
            storage total, storage used
        Out **(Server Features)**
    Function *Metadata_Server_Status*
        If metadata server resources out of range
        Out **(features that are out of range)**

FIG. 6B

Storage_Server Functions
    Function *Register_Storage_Server*
        File Server Features = location, range of files accessed,
            storage total, storage used
        Out **(Storage Server Features)**
    Function *Storage_Server_Status*
        If storage server values out of range
        Out **(features that are out of range)**
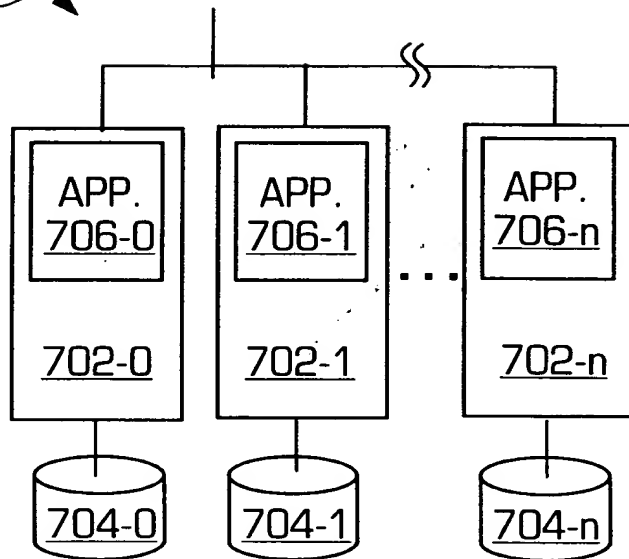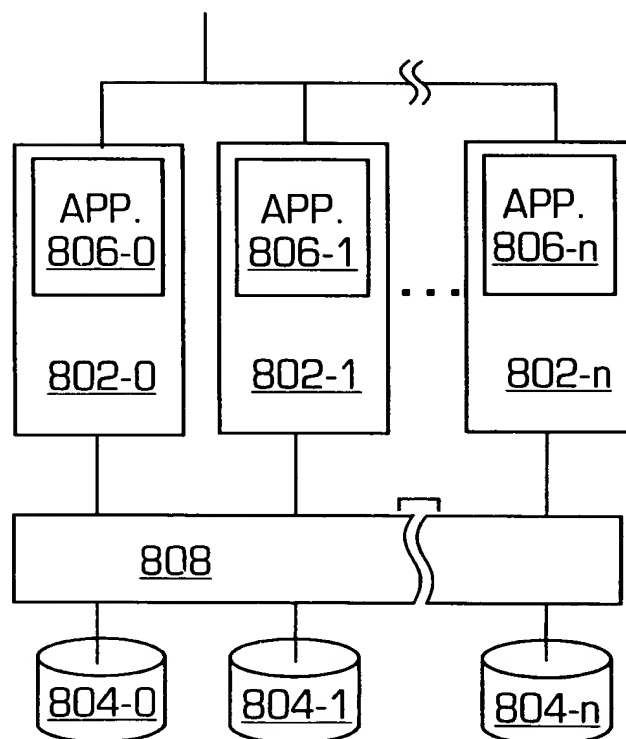
FIG. 6C

700

APP.
706-0

APP.
706-1

APP.
706-n

702-0

702-1

702-n

704-0   704-1   704-n

FIG. 7

800

APP.
806-0

APP.
806-1

APP.
806-n

802-0

802-1

802-n

808

804-0   804-1   804-n

FIG. 8